

IN THE CLAIMS

Please amend the claims as described below. In accordance with 37 CFR §1.121, a complete listing of all claims in the application is provided below. Notably, the status of each claim is indicated in the parenthetical expression adjacent to the corresponding claim number.

Claims 1 - 50 (**canceled**).

1 Claim 51 (**new**): An EIW unit for use in sensing a parameter of a surface
2 structure that is formed by integrated circuit processing equipment which is used to
3 manufacture an integrated circuit, the EIW unit comprising:
4 a substrate having a wafer-shaped profile; and
5 a plurality of sensors, disposed on or in the substrate, to sample the process
6 parameter of the surface structure that is formed above the sensors and on the EIW unit by
7 the integrated circuit processing equipment during processing.

1 Claim 52 (**new**): The EIW unit of claim 51 wherein the plurality of sensors
2 includes a plurality of light sensors and wherein the EIW further includes a predetermined
3 surface layer disposed on the EIW and above the plurality of light sensors wherein the
4 predetermined surface layer is capable of receiving a surface structure thereon.

1 Claim 53 (**new**): The EIW unit of claim 52 wherein predetermined surface layer
2 includes a plurality of layers.

1 Claim 54 (**new**): The EIW unit of claim 53 wherein the plurality of layers includes
2 a composite dielectric structure.

1 Claim 55 (**new**): The EIW unit of claim 52 wherein the predetermined surface
2 layer is patterned to guide or shape the light sampled by the plurality of light sensors.

1 Claim 56 (**new**): The EIW unit of claim 52 wherein the predetermined surface
2 layer includes a grating structure having a refractive index.

1 Claim 57 (**new**): The EIW unit of claim 56 wherein the refractive index of the
2 grating structure is capable of being changed dynamically.

1 Claim 58 (**new**): The EIW unit of claim 56 wherein the EIW unit further includes
2 an acoustic modulation module disposed in or on the substrate to control the refractive
3 index of the grating structure.

1 Claim 59 (**new**): The EIW unit of claim 51 wherein the plurality of sensors
2 operates in an end-point mode.

1 Claim 60 (**new**): The EIW unit of claim 51 wherein the plurality of sensors
2 operates in a real-time mode.

1 Claim 61 (**new**): The EIW unit of claim 51 wherein the plurality of sensors
2 includes a plurality of light sensors and wherein the light sensors sample light that is
3 reflected or scattered by the surface structure formed by the integrated circuit processing
4 equipment during processing.

1 Claim 62 (**new**): The EIW unit of claim 61 further including a first light source,
2 disposed on or in the substrate, to output light to permit sampling of the process parameter
3 of the surface structure by the plurality of sensors.

1 Claim 63 (**new**): The EIW unit of claim 62 wherein the intensity of the light output
2 by the first light source may be varied or modulated.

1 Claim 64 (**new**): The EIW unit of claim 62 further including a second light source
2 disposed on or in the substrate, to output light to permit sampling of the process parameter
3 of the surface structure by the plurality of sensors and wherein the intensity of the light
4 output by the first light source may be varied or modulated relative to the second light
5 source.

1 Claim 65 (**new**): The EIW unit of claim 62 wherein the process parameter is a
2 thickness of the surface structure formed above the sensors and on the EIW unit by the
3 integrated circuit processing equipment during processing.

1 Claim 66 (**new**): The EIW unit of claim 61 wherein the plurality of light sensors is
2 CMOS devices, charge coupled devices, or photodiodes.

1 Claim 67 (**new**): The EIW unit of claim 61 wherein the plurality of light sensors
2 periodically or continuously samples the intensity of the light while the EIW unit is disposed
3 in the integrated circuit processing equipment and undergoing processing.

1 Claim 68 (**new**): The EIW unit of claim 67 further including data storage, coupled
2 to the plurality of light sensors, to store data which is representative of the parameter of the
3 surface structure.

1 Claim 69 (**new**): The EIW unit of claim 67 further including:
2 communication circuitry to provide the data which is representative of the parameter
3 to external circuitry; and
4 at least one rechargeable battery, to provide electrical power to the communication
5 circuitry.

1 Claim 70 (**new**): The EIW unit of claim 67 wherein the process parameter is a
2 surface profile of the surface structure.

1 Claim 71 (**new**): A method of measuring a process parameter of a surface
2 structure that is formed by an integrated circuit manufacturing process wherein the method
3 of measuring the process parameter uses an EIW unit having a substrate, which includes a

4 wafer-shaped profile, and a plurality of sensors disposed on or in the substrate, the method
5 comprising:
6 placing the substrate into the integrated circuit processing equipment;
7 performing the integrated circuit manufacturing process that forms a surface
8 structure above the plurality of sensors during the manufacturing process;
9 enabling the plurality of sensors to sample the process parameter of the surface
10 structure;
11 sampling the process parameter of the surface structure using the plurality of
12 sensors; and
13 determining the process parameter of the surface structure using data from the
14 plurality of sensors.

1 Claim 72 (**new**): The method of claim 71 wherein the EIW unit further includes a
2 predetermined surface layer having a refractive index wherein the predetermined surface
3 layer is disposed above the plurality of light sensors and wherein the method further
4 includes changing the refractive index of the predetermined surface layer.

1 Claim 73 (**new**): The method of claim 72 further including dynamically changing
2 the refractive index of the predetermined surface layer while performing the integrated
3 circuit manufacturing process.

1 **Claim 74 (new):** The method of claim 71 wherein the process parameter of the
2 surface structure that is formed by the integrated circuit manufacturing process is sampled
3 after performing the integrated circuit manufacturing process.

1 **Claim 75 (new):** The method of claim 71 wherein the process parameter of the
2 surface structure that is formed by the integrated circuit manufacturing process is sampled
3 while performing the integrated circuit manufacturing process.

1 **Claim 76 (new):** The method of claim 71 wherein the EIW unit further includes a
2 plurality of light sources wherein the plurality of sensors samples the light output by the
3 plurality of light sources and wherein the method further includes enabling the plurality of
4 light sources to output light and wherein sampling the process parameter of the surface
5 structure using the plurality of sensors includes sampling the response to the light output by
6 the plurality of light sources using the plurality of sensors.

1 **Claim 77 (new):** The method of claim 76 wherein the plurality of light sources
2 output light at different wavelengths.

1 **Claim 78 (new):** The method of claim 76 wherein sampling the response to the
2 light output by the plurality of light sources includes sampling the light that is reflected or
3 scattered by the surface structure formed by the integrated circuit processing equipment
4 during processing.

1 Claim 79 (**new**): The method of claim 76 further including varying the intensity of
2 the light output by the plurality of light sources.

1 Claim 80 (**new**): The method of claim 76 further including varying the intensity of
2 the light output by a first light source of the plurality of light sources relative to another light
3 source of the plurality of light sources.

1 Claim 81 (**new**): The method of claim 76 wherein sampling the response to the
2 light output by the plurality of light sources includes periodically or continuously sampling
3 the response to the light output by the plurality of light sources while performing the
4 integrated circuit manufacturing process.

1 Claim 82 (**new**): The method of claim 76 further including sampling the intensity
2 of the reflected or scattered light using the plurality of sensors.

1 Claim 83 (**new**): The method of claim 82 wherein the plurality of light sources is
2 disposed on or in the substrate of the EIW unit.

1 Claim 84 (**new**): The method of claim 83 further including varying the intensity of
2 the light output by the plurality of light sources.

1 Claim 85 (**new**): The method of claim 83 further including varying the intensity of
2 the light output by a first light source of the plurality of light sources relative to another light
3 source of the plurality of light sources.

1 Claim 86 (**new**): The method of claim 83 wherein sampling the response to the
2 light output by the plurality of light sources includes periodically or continuously sampling
3 the response to the light output by the plurality of light sources while performing the
4 integrated circuit manufacturing process.

1 Claim 87 (**new**): The method of claim 83 further including sampling the response
2 to the light output by the plurality of light sources after performing the integrated circuit
3 manufacturing process.

1 Claim 88 (**new**): The method of claim 83 wherein the EIW unit further includes a
2 predetermined surface layer having a refractive index wherein the predetermined surface
3 layer is disposed above the plurality of sensors and plurality of light.

1 Claim 89 (**new**): The method of claim 88 further including changing the refractive
2 index of the predetermined surface layer.

1 Claim 90 (**new**): The method of claim 88 further including dynamically changing
2 the refractive index of the predetermined surface layer while performing the integrated
3 circuit manufacturing process.

1 Claim 91 (**new**): The method of claim 83 wherein the process parameter is a
2 thickness of the surface structure.

1 Claim 92 (**new**): The method of claim 71 wherein the process parameter is a
2 thickness of the surface structure.

1 Claim 93 (**new**): The method of claim 71 wherein the process parameter is a
2 spatial distribution of a surface structure.

1 Claim 94 (**new**): A system for sensing a process parameter of a surface structure
2 that is formed by integrated circuit processing equipment which is used to manufacture an
3 integrated circuit, the system comprising:
4 an EIW unit that is capable of being disposed in the integrated circuit processing
5 equipment, the EIW unit including:
6 substrate having a wafer-shaped profile; and
7 a sensor, disposed on or in the substrate, to sample the process parameter of
8 the surface structure that is formed by integrated circuit processing equipment,
9 wherein the sensor samples the process parameter while or after the EIW unit is
10 subjected to processing by the integrated circuit processing equipment; and
11 a computing device to receive the samples from the sensor and determine the
12 process parameter of the surface structure using the samples.

1 Claim 95 (**new**): The system of claim 94 wherein the sensor includes CMOS
2 devices, charge coupled devices, or photodiodes.

1 Claim 96 (**new**): The system of claim 94 wherein the process parameter is a
2 surface profile of the surface structure.

1 Claim 97 (**new**): The system of claim 94 wherein the process parameter is a
2 thickness of the surface structure.

1 Claim 98 (**new**): The system of claim 94 wherein the sensor operates in an end-
2 point mode.

1 Claim 99 (**new**): The system of claim 94 wherein the sensor operates in a real-
2 time mode.

1 Claim 100 (**new**): The system of claim 94 wherein the EIW unit further includes a
2 predetermined surface layer disposed above the sensor wherein the predetermined surface
3 layer is capable of receiving a surface structure thereon, and wherein the system further
4 includes a source that outputs light.

1 Claim 101 (**new**): The system of claim 100 wherein the source outputs light at
2 different wavelengths.

1 Claim 102 (**new**): The system of claim 100 wherein the sensor includes a plurality
2 of light sensors wherein the light sensors sample light that is reflected or scattered by a
3 surface structure that is formed by the integrated circuit processing equipment during
4 processing.

1 Claim 103 (**new**): The system of claim 102 wherein the predetermined surface
2 layer is patterned to guide or shape the light output by the source.

1 Claim 104 (**new**): The system of claim 102 wherein the predetermined surface
2 layer includes a grating structure having a refractive index.

1 Claim 105 (**new**): The system of claim 104 wherein the refractive index of the
2 grating structure is capable of being changed dynamically.

1 Claim 106 (**new**): The system of claim 102 wherein the EIW unit further includes
2 an acoustic modulation module disposed in or on the substrate to control the refractive
3 index of the grating structure.

1 Claim 107 (**new**): The system of claim 100 wherein predetermined surface layer
2 includes a plurality of layers.

1 Claim 108 (**new**): The system of claim 107 wherein the plurality of layers includes
2 a composite dielectric structure.

1 Claim 109 (**new**): The system of claim 100 wherein the source includes a plurality
2 of light sources disposed in or on the substrate of the EIW unit.

1 Claim 110 (**new**): The system of claim 109 wherein the sensor and source operate
2 in an end-point mode.

1 Claim 111 (**new**): The system of claim 109 wherein the sensor and source operate
2 in a real-time mode.

1 Claim 112 (**new**): The system of claim 109 wherein the intensity of the light output
2 by the plurality of light sources may be varied or modulated.

1 Claim 113 (**new**): The system of claim 109 wherein the intensity of the light output
2 by a first light source of the plurality of light sources may be varied or modulated relative to
3 another light source of the plurality of light sources.

1 Claim 114 (**new**): The system of claim 109 wherein the computing device
2 determines a thickness of a surface layer formed by the integrated circuit processing
3 equipment during processing.

1 Claim 115 (**new**): The system of claim 109 wherein the computing device
2 determines a spatial distribution of a surface layer formed by the integrated circuit
3 processing equipment during processing.